**Amendments to and Listing of the Claims:**

Please amend claims 1, 10, 13 and 14, as indicated below, wherein strikethrough and double bracketing each indicate a deletion and underlining indicates an addition. Please cancel claim 12.

1. (Currently amended) A holding fixture for use with an interferometric optical microscope, the fixture being adapted to receive an optical fiber connector having first and second guide holes, the fixture comprising:

a base plate mountable along a first surface of the base plate to a mounting surface of the microscope and having an opening extending through the base plate and sized to complementarily receive the optical fiber connector and to guide the optical fiber connector into an operative position relative to the microscope;

an aperture plate connected to the first surface of the base plate, the aperture plate having an aperture overlapping the base plate opening;

the aperture plate further including first and second guide pins adapted to fit within the connector guide holes when the optical fiber connector is received within the base plate opening,

wherein the fixture allows the optical fiber connector to be held in a precise and repeatable orientation relative to the microscope in turn facilitating accurate and precise measurements of dimensional characteristics of the optical fiber connector.

2. (Previously Presented) The fixture of claim 1, wherein the guide pins have a length of 4.5 mm ± about 0.5 mm.

3. (Original) The fixture of claim 1, wherein the base plate, aperture plate and guide pins are fabricated from stainless steel.

4. (Original) The fixture of claim 1, wherein the base plate, aperture plate and guide pins are fabricated from carbide steel.

5. (Original) The fixture of claim 1, wherein longitudinal axes of the guide pins are oriented generally parallel to each other.

6. (Original) The fixture of claim 1, wherein longitudinal axes of the guide pins are oriented generally perpendicular to an upper surface of the aperture plate.

7. (Original) The fixture of claim 1, wherein longitudinal axes of the guide pins are oriented with a predetermined angular offset.

8. (Original) The fixture of claim 1, wherein the guide pins have a generally circular cylindrical shape of constant diameter.

9. (Original) The fixture of claim 1, wherein the guide pins have a relief cut into a middle portion of the pins.

10. (Currently amended) A holding fixture for use with an interferometric optical microscope, the fixture being adapted to receive an optical fiber connector having first and second guide pins, the fixture comprising:

a base plate mountable along a first surface of the base plate to a mounting surface of the microscope and having an opening extending through the base plate and sized to receive the optical fiber connector and to guide the optical fiber connector into an operative position relative to the microscope;

an aperture plate mounted to the first surface of the base plate, the aperture plate having an aperture overlapping the base plate opening;

the aperture plate further including first and second guide holes adapted to directly receive the first and second connector guide pins therein, respectively,

wherein the fixture allows the optical fiber connector to be held in a precise and repeatable orientation relative to the microscope in turn facilitating accurate and precise measurements of dimensional characteristics of the optical fiber connector.

11. (Original) The fixture of claim 10, wherein the aperture plate is fabricated from carbide steel.

12. (Cancelled)

13. (Original) ~~The method of measuring dimensional characteristics of an optical fiber connector of claim 12, further including the steps of~~ A method of measuring dimensional characteristics of an optical fiber connector, comprising the steps of:

providing an interferometric microscope having a holding fixture connected thereto, the fixture being adapted to receive and hold, in a fixed, repeatable orientation, the optical connector;

installing the optical fiber connector in the fixture in a first orientation;

operating the microscope to obtain a first set of measurements of three dimensional characteristics of the optical fiber connector;

removing the optical fiber connector;

rotating the optical fiber connector 180 degrees about a longitudinal axis of the connector;

re-installing the optical fiber connector within the fixture;

operating the microscope to obtain a second set of measurements of the dimensional characteristics of the optical fiber connector; and

calculating an offset angle based upon a range between the first and second measurements.

14. (Currently amended) The method of measuring dimensional characteristics of an endface of an optical fiber connector of claim [[12]] 13, further comprising the step of calculating a calibration factor for the fixture based on the offset angle.